

In the Claims

Claim 1 (Currently amended): A multi-functional contrast agent comprising a CdS:Mn/ZnS core/shell quantum dot, wherein said quantum dot is fluorescent, radio-opaque, and paramagnetic, and wherein said ZnS shell of said contrast agent is amine functionalized, and wherein said contrast agent further comprises a targeting moiety conjugated to said quantum dot.

Claims 2-3 (Cancelled)

Claim 4 (Previously presented): The contrast agent of claim 1, wherein said contrast agent further comprises a targeting moiety conjugated to said quantum dot, wherein said targeting moiety comprises a TAT peptide or folic acid.

Claim 5 (Previously presented): The contrast agent of claim 1, wherein said contrast agent further comprises a coating (outer shell) surrounding said ZnS shell.

Claim 6 (Previously presented): The contrast agent of claim 1, wherein said contrast agent further comprises a coating (outer shell) and a targeting moiety conjugated to said coating.

Claim 7 (Cancelled)

Claim 8 (Previously presented): The contrast agent of claim 1, wherein said contrast agent further comprises an amine functionalized silica coating around said ZnS shell.

Claim 9 (Previously presented): The contrast agent of claim 1, wherein said quantum dot is water-dispersable.

Claim 10 (Previously presented): The contrast agent of claim 1, wherein said CdS:Mn/ZnS core/shell quantum dot further comprises a Gd (III)/SiO₂ coating (outer shell) or a Dys/SiO₂ coating (outer shell).

Claim 11 (Previously presented): The contrast agent of claim 1, wherein said quantum dot is doped with a fluorescent dye molecule or a paramagnetic material, or both.

Claim 12 (Previously presented): The contrast agent of claim 1, wherein said quantum dot further comprises a coating that renders said contrast agent activatable in a cell.

Claim 13 (Cancelled)

Claim 14 (Previously presented): The contrast agent of claim 1, wherein said quantum dot further comprises a coating that renders said contrast agent activatable in a cell, and wherein said coating is a carbohydrate selected from the group consisting of galactose, glycogen, or glucose.

Claim 15 (Currently amended): The contrast agent of claim 10, wherein said quantum dot further comprises ~~[[a]]~~ said Gd (III)/SiO₂ coating (outer shell), and wherein said quantum dot further comprises a carbohydrate that blocks the ninth coordination site of Gd in the absence of a carbohydrate-degrading enzyme.

Claims 16-17 (Cancelled)

Claim 18 (Withdrawn—Currently amended): A method for visualizing a target within an opaque medium said method comprising introducing a multi-functional contrast agent into the target or into the opaque medium and visualizing the target, wherein ~~the~~ said contrast agent comprises: i) a CdS:Mn/ZnS core/shell quantum dot, wherein said quantum dot is fluorescent, radio-opaque, and paramagnetic, wherein said ZnS shell of said contrast agent is amine functionalized, and wherein said contrast agent further comprises a targeting moiety conjugated to said quantum dot; or ii) a

CdS:Mn/ZnS core/shell quantum dot, wherein said quantum dot is fluorescent, radio-opaque, and paramagnetic, and wherein said CdS:Mn/ZnS core/shell quantum dot further comprises a Gd (III)/SiO₂ coating (outer shell) or a Dys/SiO₂ coating (outer shell).

Claim 19 (Withdrawn): The method of claim 18, wherein said opaque medium comprises living or dead biological tissue and said visualizing is carried out *in vitro* or *in vivo*.

Claim 20 (Withdrawn): The method of claim 18, wherein said target comprises a living or dead cell and said visualizing is carried out *in vitro* or *in vivo*.

Claims 21-29 (Cancelled)

Claim 30 (Withdrawn—Currently amended): The method of claim 18, wherein said quantum dot further comprises Gd (III)/SiO₂ coating (outer shell) and a carbohydrate, wherein ~~the~~ said carbohydrate blocks the ninth coordination site of Gd in the absence of a carbohydrate-degrading enzyme but renders the coordination site accessible to intracellular water in the presence of ~~the~~ said carbohydrate-degrading enzyme.

Claim 31 (Withdrawn—Currently amended): The method of claim 30, wherein ~~the~~ said carbohydrate is selected from the group consisting of galactose, glycogen, and glucose.

Claims 32-33 (Cancelled)

Claim 34 (Withdrawn): The method of claim 18, wherein said visualizing is carried out by one or more modalities selected from the group consisting of fluorescence imaging, magnetic resonance imaging (MRI), and computer-aided tomography (CAT).

Claims 35-50 (Cancelled)

Claim 51 (Currently amended): The ~~multi-functional~~ contrast agent of claim 1, wherein said contrast agent is associated with at least a portion of an implantable or deployable medical device.

Claim 52 (Currently amended): A composition comprising a multi-functional contrast agent and a pharmaceutically acceptable carrier, wherein said contrast agent comprises: i) a CdS:Mn/ZnS core/shell quantum dot, wherein said quantum dot is fluorescent, radio-opaque, and paramagnetic, wherein said ZnS shell of said contrast agent is amine functionalized, and wherein said contrast agent further comprises a targeting moiety conjugated to said quantum dot; or ii) a CdS:Mn/ZnS core/shell quantum dot, wherein said quantum dot is fluorescent, radio-opaque, and paramagnetic, and wherein said CdS:Mn/ZnS core/shell quantum dot further comprises a Gd (III)/SiO₂ coating (outer shell) or a Dys/SiO₂ coating (outer shell).

Claim 53 (Previously presented): The composition of claim 52, further comprising a pharmaceutically active agent.

Claim 54 (New): A multi-functional contrast agent comprising a CdS:Mn/ZnS core/shell quantum dot, wherein said quantum dot is fluorescent, radio-opaque, and paramagnetic, and wherein said CdS:Mn/ZnS core/shell quantum dot further comprises a Gd (III)/SiO₂ coating (outer shell) or a Dys/SiO₂ coating (outer shell).

Claim 55 (New): The contrast agent of claim 54, wherein said contrast agent further comprises a targeting moiety conjugated to said quantum dot.

Claim 56 (New): The contrast agent of claim 54, wherein said contrast agent further comprises a targeting moiety conjugated to said quantum dot, wherein said targeting moiety comprises a TAT peptide or folic acid.

Claim 57 (New): The contrast agent of claim 54, wherein said contrast agent further comprises a coating (outer shell) surrounding said ZnS shell.

Claim 58 (New): The contrast agent of claim 54, wherein said contrast agent further comprises a coating (outer shell) and a targeting moiety conjugated to said coating.

Claim 59 (New): The contrast agent of claim 54, wherein said ZnS shell of said contrast agent is amine functionalized.

Claim 60 (New): The contrast agent of claim 54, wherein said contrast agent further comprises an amine functionalized silica coating around said ZnS shell.

Claim 61 (New): The contrast agent of claim 54, wherein said quantum dot is water-dispersable.

Claim 62 (New): The contrast agent of claim 54, wherein said quantum dot is doped with a fluorescent dye molecule or a paramagnetic material, or both.

Claim 63 (New): The contrast agent of claim 54, wherein said quantum dot further comprises a coating that renders said contrast agent activatable in a cell.

Claim 64 (New): The contrast agent of claim 54, wherein said quantum dot further comprises a coating that renders said contrast agent activatable in a cell, and wherein said coating is a carbohydrate selected from the group consisting of galactose, glycogen, or glucose.

Claim 65 (New): The contrast agent of claim 54, wherein said quantum dot comprises said Gd (III)/SiO₂ coating (outer shell), and wherein said quantum dot further comprises a carbohydrate that blocks the ninth coordination site of Gd in the absence of a carbohydrate-degrading enzyme.

Claim 66 (New): The contrast agent of claim 54, wherein said contrast agent is associated with at least a portion of an implantable or deployable medical device.